174

Analytical Biochemistry

An International Journal

PERIODICAL
UNIVERSITY OF HAWAII
LIBRARY

EDITOR: *Alvin Nason*

ADVISORY BOARD

Norman G. Anderson
Gilbert Ashwell
James A. Bassham
Samuel P. Bessman
Robert M. Bock
Robert L. Bowman
Melvin Calvin
John Gergely
I. C. Gunsalus
Osamu Hayaishi
C. H. W. Hirs
Evan C. Horning
Rollin D. Hotchkiss
Walter L. Hughes
Andrew A. Kandutsch
Irving Klotz
Luis F. Leloir
Olov Lindberg
Feodor Lynen
Edward F. MacNichol, Jr.
Vincent Massey
Manfred M. Mayer
Hugh J. McDonald
Marshall Nirenberg
Kazuo Okunuki
Donald D. Van Slyke
Herbert A. Sober
Sidney Udenfriend
Samuel B. Weiss
Theodor Wieland
George Wolf
Lemuel D. Wright

VOLUME 14
1966

ACADEMIC PRESS
New York and London

Copyright ©, 1966, by Academic Press Inc.

ALL RIGHTS RESERVED

No part of this volume may be reproduced in any form, by photostat, microfilm, or any other means, without written permission from the Publishers.

Made in the United States of America

679188

QP501
A64
V.14-15

CONTENTS OF VOLUME 14

Number 1, January 1966

Christoph Zimmer and Hilmer Reinert. Spectrophotometric Titration Equipment Suitable for Investigations of Nucleic Acid Structure 1

Opendra Kumar Sharma and P. S. Krishnan. Colorimetric Estimation of Humic Acid with the Phenol Reagent of Folin and Ciocalteu 11

John J. O'Neill and Stuart H. Simon. A Technique for the Study of Electrically Stimulated Tissue with ^{14}C-Labeled Substrates 17

John M. Foster. An Oxygen Electrode Respirometer for Measuring Very Low Respiration Rates 22

George G. Guilbault and David N. Kramer. Lipolysis of Fluorescein and Eosin Esters. Kinetics of Hydrolysis . . . 28

Karl Dus, Sidney Lindroth, Ronald Pabst, and Rosalind M. Smith. Continuous Amino Acid Analysis: Elution Programming and Automatic Column Selection by Means of a Rotating Valve 41

H. S. Marver, D. P. Tschudy, M. G. Perlroth, A. Collins, and G. Hunter, Jr. The Determination of Aminoketones in Biological Fluids 53

George G. Guilbault. Electrochemistry of Enzymes. Determination of Peroxidase and Catalase 61

Ya Pin Lee and Tunekazu Takahashi. An Improved Colorimetric Determination of Amino Acids with Use of Ninhydrin 71

Zigmund Z. Ziporin and Richard W. Hanson. A Chromatographic Procedure for the Separation and Detection of Pyridine Nucleotides and Related Compounds from Tissue Extracts 78

Ralph Penniall. An Improved Method for the Determination of Inorganic Phosphate by the Isobutanol-Benzene Extraction Procedure 87

William J. Jordan, Jr., Albert G. Faulkner, and Edward C. Knoblock. Heparin-Calcium Complexes as a Measure of Serum Low-Density Lipoproteins 91

Kendall W. Corbin and Alan H. Brush. Catalase-Like Activity of Chicken Egg White: A Reconsideration 95

Peter Weber, Irene Bornstein, and Richard J. Winzler. An Automated Column Chromatographic Procedure for the Fluorometric Determination of Mixtures of Hexoses . . . 100

Hillel J. Gitelman, Charles Hurt, and Leo Lutwak. An Automated Spectrophotometric Method for Magnesium Analysis 106
Walter C. Schneider, W. Guy Fiscus, and Jo Ann B. Lawler. Enzymatic Preparation of Labeled Phosphoryl Choline, Phosphoryl Ethanolamine, Cytidine Diphosphate Choline, Deoxycytidine Diphosphate Choline, Cytidine Diphosphate Ethanolamine, and Deoxycytidine Diphosphate Ethanolamine . . 121
Richard D. Berlin. Determination of Free Magnesium . . 135
F. W. Leaver. Large-Scale Purification of Proteins by Membrane Electro-Partition 145

Short Communications

A. Herzog, R. Lombaert, and R. Hamers. Automatic Optical Scanning in Density Gradient Centrifugations . . . 149
Derek G. Smyth and George R. Stark. Quantitative Blocking of Amino Groups in Acid Solution by Carbamylation 152
B. Halpern, J. Ricks, and J. W. Westley. Biochemical Applications of Gas Liquid Chromatography: The Stereoscopic Hydrolitic Action of Acylase. I. (Hog Kidney) . 156
H. H. Weetall and N. Weliky. A New Technique for the Enzymatic Detection of Hydrogen Peroxide . . . 160
A. N. Siakotos and George Rouser. Quantitative Thin-Layer Chromatography of Lipids by Photographic Densitometry 162
Frederick T. Zugibe. Mixer for Ultramicro Enzymic Digestions 165
N. K. Schaffer and R. A. Balakir. Decomposition of Serine during Acid Hydrolysis of Phosphorylserine . . . 167

Number 2, February 1966

Donald V. Tappan. A Light Scattering Technique for Measuring Protein Concentration 171
Gary D. Christian. Coulometric Titration of Proteins with Electrogenerated Hypobromite 183
L. Zeitz and R. Lee. Zinc Analysis in Biological Specimens by X-Ray Fluorescence 191
G. B. Russell. The Routine Measurement of Lipid-Bound Sulfoquinovose in Plants 205
Elaine G. Cole and Dale K. Mecham. Cyanate Formation and Electrophoretic Behavior of Proteins in Gels Containing Urea 215
Wesley D. Skidmore and Edward L. Duggan. Simultaneous Spectral Determination of Both Base Composition and Concentration of DNA 223

Arthur W. Devor, Reta O'Brien Barichievich, and Badruddin Siddiqui. Continued Studies on the Formalin Method for Liver Glycogen 237
Darrell N. Ward, Jo Ann Coffey, Durwood B. Ray, and William M. Lamkin. Quantitative Analysis of Acetyl Groups in Proteins and Peptides by a Gas Chromatographic Procedure 243
J. M. Gebicki and Simon Freed. Microdetermination of Nucleotides in Hydrolyzates of RNA 253
R. R. Barton. A Specific Method for Quantitative Determination of Glucose 258
Somasundaram Addanki, Juan F. Sotos, and Phillip D. Rearick. Rapid Determination of Picomole Quantities of ATP with a Liquid Scintillation Counter 261
Leonard J. Greenberg. The Use of 2-Naphthyl-β-D-Glucuronide as a Substrate for the Fluorometric Analysis of β-Glucuronidase 265
Steven B. Zimmerman and Georgianna Sandeen. The Ribonuclease Activity of Crystallized Pancreatic Deoxyribonuclease 269
A. K. Bhattacharyya and D. Aminoff. Estimation of Free Methylpentoses in the Presence of Glycosidically Bound Sugar 278
Marco Baggiolini and Marcel H. Bickel. A New Type of Incubation Apparatus for the Determination of Metabolically Produced $^{14}CO_2$ 290
H. E. Firschein and Jonathan P. Shill. Determination of Total Hydroxyproline in Urine and Bone Extracts . . . 296
Joseph MacGee. Determination of Nucleic Acid Base Ratios by Gas-Liquid Chromatography 305

Short Communications

D. F. Logsdon, Jr. Extraction of Rat Skin DNA with Sodium Dodecyl Sulfate 315
L. A. AE. Sluyterman. Amperometric Argentometric Titration of Thiol Groups in Imidazole Buffer 317

Number 3, March 1966

Alice N. Schwartz and Burton A. Zabin. Desalting of Proteins, Peptides, and Amino Acids on Polyacrylamide Gel . . . 321
A. F. S. A. Habeeb. Determination of Free Amino Groups in Proteins by Trinitrobenzenesulfonic Acid 328
K. Sjövall, J. Sjövall, K. Maddock, and E. C. Horning. Estimation of Dehydroepiandrosterone Sulfate in Human Serum by Gas-Liquid Chromatography 337

Martin G. Stanton. Measurement by Starch-Gel Electrophoresis of Enthalpy Change during Reversible Dissociation of Groundnut Protein 347
G. R. Shepherd and L. R. Gurley. High-Resolution Disc Electrophoresis of Histones. I. An Improved Method . . . 356
L. R. Gurley and G. R. Shepherd. High Resolution Disc Electrophoresis of Histones. II. Application to Whole and Fractionated Preparations from Various Laboratories . . . 364
M. Messer and A. Dahlqvist. A One-Step Ultramicro Method for the Assay of Intestinal Disaccharidases 376
Pablo Pulido, Keiichiro Fuwa, and Bert L. Vallee. Determination of Cadmium in Biological Materials by Atomic Absorption Spectrophotometry 393
J. C. Crawhall, C. J. Thompson, and Kathryn H. Bradley. Separation of Cystine, Penicillamine Disulfide and Cysteine-Penicillamine Mixed Disulfide by Automatic Amino Acid Analysis 405
Susan T. Brownlee and Robert W. Wheat. On the Determination of Galactosamine-Uronic Acid 414
Roger M. McKinney, Janet T. Spillane, and George W. Pearce. A Simple Method for Determining the Labeling Efficiency of Fluorescein Isothiocyanate Products 421
D. Morse and B. L. Horecker. Thin-Layer Chromatographic Separation of DNS-Amino Acids 429
Victor H. Cohn and Jerry Lyle. A Fluorometric Assay for Glutathione 434
James B. Boyd and Herschel K. Mitchell. Measurement of the Radioactivity in Carbon-14 and Tritium-Labeled Proteins that Have Been Separated by Disk Electrophoresis . . 441
T. Hollmén and E. Kulonen. Separation of the Components in Collagen by Preparative Starch-Gel Electrophoresis . . 455
Wayne L. Ryan and James Dworak. A New Method of Sample Application for Column Chromatography of Amino Acids . 467
Alan D. Adler and J. L. Harris. Purity of Crystalline Protohemin IX 472
Uwe Nissen. Estimation of Trypsin in Presence of Plasmin and Their Separation by Gel Filtration 480

Short Communications

N. L. Incardona and G. Ludwig. An Automatic Masking Assembly for Multiple-Cell Velocity Experiments with the UV Optics of the Ultracentrifuge 487
W. D. Conway, A. J. Grace, and J. E. Rogers. Simplification of the Oxygen-Flask Combustion Procedure for the Preparation of Samples for Liquid Scintillation Counting 491

J. C. Lewis. Mono- and Bis-(2-hydroxyethyl)imino-Tris-hydroxymethyl)-methane, "Mono-tris" and "Bis-tris": New Buffer Bases with pKa^T 7.83 and 6.46 495
Raymond F. Chen. Reduction of Light Scatter in Fluorometry by the Use of Horizontally Polarized Excitation. 497

Author Index 500

Subject Index 502